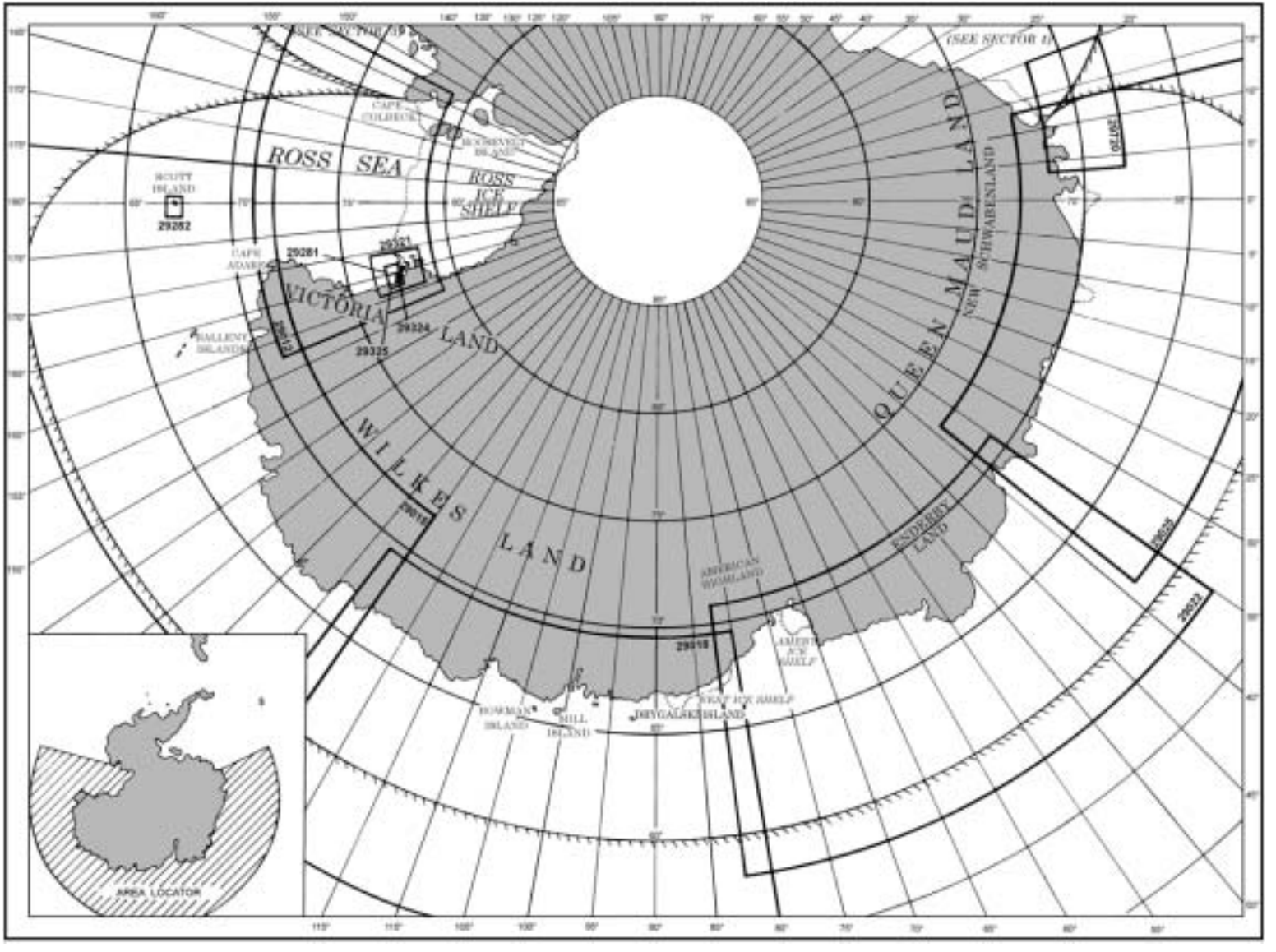
Click on "See Sector" to be hotlinked to that Sector.



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR **4** — CHART INFORMATION

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SECTOR 4

THE ANTARCTIC—CAPE COLBECK TO CAPE NORVEGIA

Plan.—This sector describes the coast of Antarctica between Cape Colbeck and Cape Norvegia, including the Ross Ice Shelf, McMurdo Sound, and the Ross Sea.

General Remarks

4.1 The Ross Sea is an extensive bight indenting the coast of Antarctica lying S of New Zealand. It is located between Victoria Land, on the W side, and the Edward VII Peninsula, on the E, and is bounded to the S by Ross Ice Front, the seaward edge of the Ross Ice Shelf. The depths in this sea are not great, generally ranging from 350 to 750m, but occasionally exceeding 900m. Pennell Bank, lying near the central area of the sea, has a least depth of 106m. McMurdo Sound, located in the SW corner of the sea, is 49 miles long and varies in width from 27 to 41 miles. The depths within the E part of this sound generally range from 650 to 890m, to the S of the Dellbridge Islands. Depths of about 550m extend S to the ice shelf. The W part of the sound has shallower depths, generally ranging from 200 to 450m.

Ice.—The Ross Sea is the most easily accessible area of this part of Antarctica. Every vessel that has attempted to enter this area at the correct season has been successful.

Tides—Currents.—The general W current setting near the continent is presumed to be divided by the Pennell Bank area. The S branch flows under the Ross Ice Shelf with a surface current setting W along the ice front at a rate of up to 3 knots. This current sets along the N coast of Ross Island and then toward the W shore of the Ross Sea, while an eddy sets round Cape Bird, the N extremity of Ross Island, and S as far as Cape Royds. In the vicinity of the latter cape, this current is joined by a strong N current which enters McMurdo Sound from beneath the Ross Ice Shelf. The combined current sets NW and N along the coast of Victoria Land and past Cape Adare. It then rejoins the main N branch current which sets NW between the continent and the Balleny Islands.

Cape Colbeck to Cape Adare

4.2 **Cape Colbeck** (77˚10'S., 158˚00'W.), the N extremity of the Edward VII Peninsula, is located about 45 miles N of Okuma Bay.

Okuma Bay (77˚50'S., 158˚20'W.), lying 53 miles E of Kainan Bay, is 3 miles wide and recedes about 4 miles into the ice shelf. A depth of 104m, with hard stone bottom, was reported to lie at the edge of the ice cliff on the E side of the bay and a depth of 238m, with hard stone bottom, was reported to lie near the ice cliff on the W side. Vast pressure ridges extend SE from the head of the bay where the shelf ice is comparatively low. It was reported (1955) that an icebreaker found this bay impossible to enter. The heavy ice within the bay was broken and hummocked by much pressure.

A current, with a rate of about 2 knots, sets into Okuma Bay from the N and brings with it large quantities of drift ice. This current then sets SW along the face of the ice shelf toward the Bay of Whales.

The Ross Ice Shelf extends about 400 miles between its seaward edge and the escarpment of the Queen Maud Mountains. It is 400 miles wide and lies between the coast of Victoria Land and the plateau of Maire Byrd Land. The W extremity of its edge is located at Cape Crozier, where immense pressure ridges are raised for several miles. The ice shelf was determined (1962) to be 67 to 98m thick. The E extremity of its edge lies E of Okuma Bay (158˚W.), where it merges with the plateau. The edge of the shelf is floating. An average depth of 567m has been determined to lie close off this edge between Cape Crozier and the Bay of Whales.

A survey in 1902 indicated that the edge of the shelf had receded 4 to 35 miles since the survey of 1841-42, with the greatest recession being between 164˚W and 169˚W and the least recession being to the W of 174˚E. The retreat of the barrier edge during the intervening 60 years has averaged 0.3 mile per year.

A survey in 1911 showed a slight advance over the greater portion of the edge, which indicated an advance rate during the intervening 9 years of 3.6m per day. A survey in 1935 showed a general advance of about 12 miles during the intervening 24 years, or slightly over 2.4m per day. The contour irregularities in the face of the edge and the height range of 4.6 to 46m were in very close agreement with the results obtained during 1911.

The N movement of the shelf surface has been measured at a point located about 10 miles E of Minna Bluff. It was determined that the shelf ice in this vicinity moved 556m in 13.5 months, or about 1.4m per day.

4.3 The Ross Ice Shelf is evidently afloat at its edge, except at the extremities, and is probably afloat for a considerable distance to the S.

It was reported that **Roosevelt Island** (79˚25'S., 162˚00'W.), ice-covered and 377m high, lies in the E part of the Ross Ice Shelf, with its N extremity located about 3 miles S of the head of the former Bay of Whales. This island extends about 90 miles S and has a width of about 40 miles. It was also reported that other snow-covered islands lie about 30 miles W and about 45 miles SE of Roosevelt Island.

The Bay of Whales was a natural harbor. However, an expedition reported (1955) that this bay no longer existed. Extensive calving of the Ross Ice Shelf has destroyed this feature, leaving a sheer wall of ice in its former position.

Kainan Bay (78˚10'S., 162˚30'W.) lies 37 miles NE of the NW end of Roosevelt Island. This bay was reported (1956) to be about 2.5 miles wide and to recede in a SW direction for about 2 miles. It was fringed by ice cliffs, 6 to 15m high. The bay is open to the NW and N and has depths of 549 to 640m over a bottom of brown silt.

It was reported (1955) that ice covered all of Kainan Bay except for an area, about 0.5 mile square, lying off the W entrance point. This ice was 2 to 3m thick and was covered

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with a layer, 0.5m thick, of compacted snow. The prevailing winds in this vicinity are between E and SW, which tend to keep drift ice out of the bay. The bay can be approached by transiting the drift ice near 180˚. When open water is reached, vessels should then head E toward the bay.

The N coast of **Ross Island** (77˚30'S., 168˚00'E.) extends SE for about 25 miles between **Cape Bird** (77˚10'S., 166˚41'E.) and **Cape Tennyson** (77˚22'S., 168˚18'E.). This latter cape is formed by a dark, rocky outcrop projecting from the ice-covered slopes of **Mount Terra Nova** (77˚31'S., 167˚57'E.).

A bay lies close W of Cape Tennyson, where the slopes of **Mount Erebus** (77˚32'S., 167˚10'E.) recede S for about 7 miles. The coast extending to the E of Cape Tennyson consists of a precipitous cliff. **Williamson Rock** (77˚27'S., 169˚15'E.) lies close to the cliff, 13 miles ESE of the cape, and Cape Crozier, the E extremity of Ross Island, is located 5 miles SSE of it.

4.4 **Cape Crozier** (77˚31'S., 169˚24'E.), surmounted by a small cairn, consists of a black, basalt cliff, 61 to 122m high. **The Knoll** (77˚31'S., 169˚21'E.), a conspicuous cone, stands above the cape and is 369m high. This cone is backed by the black and bare slopes of **Mount Terror** (77˚31'S., 168˚32'E.).

The cliffs in the vicinity of the cape form a prominent series of basalt columns, about 30m long, which appear as narrow hexagonal rods that are curved and interlocked. The cliffs are interrupted, about 2 miles NW of the cape, by a low, pebble beach. Many stranded bergs have been observed near this beach and a depth of 22m is reported to lie about 0.3 mile offshore in this vicinity.

Beaufort Island (76˚56'S., 166˚56'E.), 686m high, lies 13 miles NNE of Cape Bird. This island is volcanic in origin and has an egg-shaped appearance. The E side of the island is steep, bare, and rocky while the W side consists of a long ice slope which terminates at the sea in cliffs, 2 to 15m high. The island appears to be surrounded by deep water, but the area has not been fully surveyed.

It was reported (1961) that a shoal area extended about 0.5 mile seaward from the SW extremity of the island. This shoal was reported to be marked by a color change and could be easily avoided.

Beaufort Island has been reported (1997) to lie 0.3 mile E of its charted position.

A strong current sets W through the passage leading between Beaufort Island and Cape Bird and, at times, attains a rate of 3 knots. The strength of this current, but not its direction, is affected by the tides. This passage is frequently blocked by drift ice which has traveled along the coast of Ross Island, but there is little danger of heavy pressure.

Cape Bird, the N extremity of Ross Island, is located 7 miles N of **Mount Bird** (77˚17'S., 166˚43'E.). This cape is formed by a rounded and lofty promontory, with many headlands of black lava.

Wohlschlag Bay (77˚22'S., 166˚25'E.) lies between Cape Bird and Cape Royds. The greater part of the shore of this bay, except within 2 miles of Cape Royds, is faced by inaccessible ice cliffs, 9 to 30m high.

4.5 **Cape Royds** (77˚33'S., 166˚09'E.), a dark mass of rock, is faced by steep cliffs. Rocky Point, located 2.5 miles N of the cape, is flanked, on the N side, by the unbroken glacier slopes of Mount Erebus and, on the S side, by **Horseshoe Bay** (77˚32'S., 166˚12'E.). This latter bay is 0.3 mile wide and provides shelter in emergencies. Between Horseshoe Bay and Cape Royds, the shore is fringed by a broad, sandy beach, above which stands a conspicuous peak, 67m high.

Backdoor Bay (77˚34'S., 166˚12'E.), about 0.8 mile wide, lies close E of Cape Royds. A dangerous rock, which uncovers, lies about 0.5 mile NW of Flagstaff Point, the W entrance point of this bay. The bay has depths of 18 to 33m, but the holding ground is poor and anchorage is not recommended. A hut is reported to stand on Flagstaff Point.

North Bay lies between Cape Barne, located 2 miles SE of Flagstaff Point and Cape Evans, 4 miles SE. Anchorage can be taken, in a depth of 35m, about 200m off the shore of the bay, although this is too close if the wind shifts from the prevailing SE. The bottom is quite steep and a depth of 100m lies about 0.3 mile from the shore. A depth of 27m was reported to lie about 0.6 mile from the shore and 0.4 mile from the face of Barne Glacier, which fronts the head of the bay.

Cape Barne (77˚35'S., 166˚14'E.) consists of a steep and rocky bluff, 90m high, surmounted by a prominent volcanic pillar, 46m high. Mickle Island lies close offshore, about 0.8 mile N of this cape. Several sandy beaches fringe the shore between the cape and this island.

Cape Evans (77˚38'S., 166˚24'E.) consists of a low, triangular-shaped promontory. A shoal area extends 0.8 mile S from the cape. It was reported (1992) that a vessel touched bottom about 200m W of this area, indicating that shoals also extend SW from the cape.

McMurdo Sound (77˚30'S., 165˚00'E.) is entered between Dunlop Island and Cape Bird, the N extremity of Ross Island. This sound, which is reported to be deep throughout, extends S for about 50 miles to the ice edge. This region is perhaps the best known in Antarctica. Having been the site of four British expedition bases, it is now the location of the principal scientific base station of the United States. It is reported that there is no safe anchorage within McMurdo Sound.

4.6 The **Dellbridge Islands** (77˚40'S., 166˚25'E.), a group of four, lie S of Cape Evans. Inaccessible Island lies 1.3 miles SW of the cape and is 160m high at its E end. A submarine ridge, with depths of 101 to 152m, lies between this island and the cape. This ridge is an extension of the shoal fronting the cape and many icebergs have stranded in its vicinity. Tent Island lies 1 mile S of Inaccessible Island and is 137m high. A least depth of 58m was reported to lie 2.3 miles SW of this island. Big Razorback Island, 64m high, lies 1.3 miles E of Tent Island and Little Razorback Island, 36m high, lies 0.8 mile N of it.

From Cape Evans, the coast extends ESE for 4 miles to **Turks Head** (77˚40'S., 166˚46'E.), a precipitous, black headland, 158m high. It consists of ice cliffs, 12 to 30m high. The coast then extends S for 12 miles to Cape Armitage, the S extremity of Ross Island, and is mostly fronted by low ice cliffs.

Erebus Bay lies on the S side of the Erebus Glacier Tongue. Turtle Rock, 30m high, lies 1 mile offshore, about 2 miles S of the latter tongue. A shoal, with a least depth of 8.7m, lies about 0.5 mile offshore, 3 miles NNW of Cape Armitage. Vessels are

advised not to pass E of this shoal because the area is unsurveyed. A shoal, with a depth of 9.1m, is reported to lie about midway between this shoal and the shore.

Cape Armitage (77˚51'S., 166˚40'E.), the sloping termination of Hut Point Peninsula, is backed, 0.5 mile NE, by Observation Hill which is 228m high. A memorial cross to Captain R.F. Scott, RN, and the southern party, who lost their lives on their return from the South Pole in March 1912, surmounts this hill.

Crater Hill, 301m high, stands 1.5 miles N of Cape Armitage and Castle Rock, 412m high, lies 3 miles NNE of it.

Hut Point, where Scott's party wintered in 1902-1904, is located 1 mile NW of Cape Armitage and fronted by shoals. Shoal patches, with depths of 8.8 and 4m, lie 2 miles N and 0.8 mile S, respectively, of this point.

Pram Point (77˚51'S., 166˚45'E.) is located on the edge of the Ross Ice Shelf, 1.3 miles NE of Cape Armitage.

Scott Base (77˚51'S., 166˚45'E.), the principal New Zealand base, stands on this point. It was originally established for the International Geophysical Year in 1957 and has been manned ever since. It was the base used by Sir Edmund Hillary for the Trans Antarctic Expedition and was the base to which Sir Vivian Fuch's party returned on 2 March 1958, after crossing the continent via the South Pole in 99 days.

The base consists of nine buildings, is permanently manned throughout the year, and is connected by road to McMurdo Station.

4.7 **McMurdo Station** (77˚51'S., 166˚40'E.) (World Port Index No. 63130), the principal United States base, stands on the low, volcanic hills at the S extremity of Ross Island. Part of the station fronts Winter Quarters Bay. This station is one of the seven original constructed by the United States for the International Geophysical Year (1955-56) and has been used continually since then. Over the years, the station has expanded to provide extensive facilities for both support activities and research. It now includes the 4,320-square meter Albert P. Crary Science and Engineering Center and numerous dormitories.

The base is the primary rescue coordination center for the continent and the operational hub for the U.S. Antarctic Program, which is managed by the National Science Foundation. Virtually all personnel, equipment, and supplies destined for continental bases and field camps, except Palmer Station on the Antarctic Peninsula, are routed through McMurdo. Bulk fuel and cargo are transported by ship to this station.

The station consists of approximately 110 buildings, with graded roads, a power plant, and other utility systems such as water and waste disposal. It has a communications system, surface vehicles, a heliport, a docking area, and a fuel depot. This latter depot consists of 20 storage tanks, with a total capacity of 30 million liters (8 million gallons). In addition, a diesel-fueled saltwater distillation plant produces fresh water for most needs.

An airfield (Williams Field) is situated in the vicinity of the station. It is reported that ski-equipped aircraft can land throughout the year and wheeled aircraft can land on an ice runway from October to early December. The field also includes facilities for refueling, repairing and servicing aircraft, and housing and feeding operating personnel.

A wharf, used by supply vessels, fronts the base in Winter Quarters Bay. It is 201m long, 140m wide, and constructed of ice. Vessels must obtain approval in advance to visit McMurdo and should contact the station 72 hours and 24 hours prior to arrival. (See Part I—Legal Information and Regulations.)

4.8 Mount Morning, 2,712m high, stands near the head of the sound at the W end of a peninsula which is located SE of Koettlitz Glacier. **Mount Discovery** (78˚22'S., 165˚01'E.), 2,767m high, stands 20 miles ENE of this peak where the peninsula divides with Brown Peninsula extending 15 miles N and Minna Bluff extending 25 miles ESE. Bratina Island lies close N of Brown Peninsula.

Black Island (78˚07'S., 166˚05'E.), 1,110m high, lies with Cape Hodgson, its NW extremity, located 10 miles SE of Bratina Island. Cape Spirit forms the NE extremity of this island.

White Island, 16 miles long and 702m high, lies E of Black Island, from which it is separated by White Strait. Cape Spencer-Smith forms the N extremity of this island.

The ice front, which is generally 1.5 to 8m high, trends NE from a position located 20 miles S of Butter Point and then SE to a position 3 miles S of Cape Armitage. It then curves NE and NW and meets the S coast of Ross Island at Pram Point. This front, however, changes considerably from year to year.

The part of the E coast of Victoria Land that lies S of McMurdo Sound is quite unapproachable by sea.

From Cape Chocolate, the coast trends NNW for 17 miles to Butter Point and is backed by the Royal Society Range. Mount Lister, the summit of this range, is 3,891m high and rises 27 miles SW of Cape Chocolate. The Dailey Islands, a scattered group of five, lie NE of Cape Chocolate. The W of these small, volcanic islands is 183m high and lies 5 miles off the cape.

Koettlitz Glacier descends into the sound SE of **Cape Chocolate** (77˚56'S., 164˚35'E.) and terminates in an ice cliff.

Butter Point, the S entrance point of New Harbor, is formed by an angle in the ice cliff, about 6m high. This angle marks the N extremity of the S of the piedmonts skirting the W shore of the Ross Sea. Vessels can moor on the N side of the ice clicliff, using ice anchors placed about 200m inshore. The piedmont ice terminates in a low ice cliff which trends ESE for about 6 miles to The Strand Moraines. These moraines are separated from the piedmont glacier by a water-cut channel which undercuts the ice.

4.9 **New Harbor** (77˚36'S., 163˚51'E.), a bay, lies between Cape Bernacchi and Butter Point and recedes 6 miles SW. The Kukri Hills rise at the head of this bay and Mount Barnes, the summit, is 984m high.

The harbor has not been fully surveyed, but it is believed to be deep, although shoals may exist in the NW part. The current sets into this bay from the SE and may carry much drift ice. Winds from that direction usually form a heavy swell and there is little shelter within the bay. Strong W winds, descending via the glacier valley, may also be encountered.

From Cape Bernacchi, the coast trends NNW for 29 miles to Cape Roberts and is formed by a continuous piedmont. This

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piedmont varies in width from 3 to 12 miles and is fed by three outlet glaciers.

Cape Dunlop, a rocky headland, is located 11 miles SSE of Cape Roberts. It is formed of gneissic granite above which rests the piedmont ice.

Dunlop Island (77˚14'S., 163˚30'E.), 1.5 miles long and 18m high, lies E of Cape Dunlop from which it is separated by a strait, 0.3 mile wide.

Spike Cape, a bare and rocky point from which the piedmont ice has receded, is located 6 miles S of the island. Gneiss Point, long and rocky, is located 7 miles S of this cape. The Bay of Sails lies between these two rocky points. Another rocky outcrop, from which the piedmont ice has receded, is located at the head of this bay.

Mount Newall, 2,134m high, rises 12 miles W of Gneiss Point and forms the S side of the Wright Lower Glacier.

Marble Point (77˚26'S., 163˚50'E.) is located 2.5 miles S of Gneiss Point. Bernacchi Bay lies on the S side of this rocky spur. The bottom of the bay appears to regular and a depth of 75m lies in the middle, about 1.3 miles offshore. Between Gneiss Point and Cape Bernacchi, located at the S side of the bay, the shore, from which the face of the piedmont has receded, consists of a bare, rocky terrace, about 1 mile wide.

4.10 Granite Harbor (76˚33'S., 162˚44'E.) lies between Cape Archer, on the N side, and Cape Roberts, on the S. It is 12 miles wide and recedes W for about 10 miles. This harbor forms the seaward end of a deep valley filled by the Mackay Glacier, which descends in a gentle slope from the interior plateau. About 1 mile inside Cape Archer, ice falls descend between steep cliffs and reach the sea in the form of a small glacier tongue.

Point Retreat is located 5.5 miles SW of Cape Archer and is backed by Kar Plateau, a flat glacier-cut shelf of black dolerite. Dreikanter Head, located 1.5 miles NNW of Point Retreat, is a steep, dark promontory, 515m high. This promontory is mostly enveloped by glacier slopes. Lion Island, 230m high, lies 1.7 miles NNE of Dreikanter Head, at the edge of a glacier.

Mckay Glacier is located at the SW side of the harbor; the Mckay Glacier Tongue projects seaward for about 2.5 miles, 3 miles SW of Point Retreat.

A bay, about 2 miles wide, lies on the S side of the tongue and Cuff Cape, a small and dark projection from which the glacier has receded, is located at its head. The shore to the S of this cape consists of steep ice falls which are almost free from silt and about 15m high. Flatiron, a flat and triangular-shaped shelf of granite from which the glacier ice has receded, is located about 1 mile S of Cuff Cape. Finger Point, the E end of this shelf, is sharp, precipitous, and gives the feature the appearance of a skyscraper.

The SW side of Flatiron forms the steep N shore of a small inlet, known as Devils Punchbowl, which is about 0.2 mile wide and 0.6 mile long. A small hanging glacier, known as Dewdrop Glacier, fronts the head of this inlet. This glacier terminates in an ice face, 18m high, which lies close above the inlet and behind a dry, gravel beach fronting avalanche slopes. A long and narrow curving ridge of red granite forms the W and S shores of the inlet. This ridge is 305m high at its W end and descends gradually, reaching sea level at its E extremity. Devils Thumb, 250m high, is a conspicuous knob of granite standing about midway along the ridge.

Devils Punchbowl was reported (1958) to be obstructed and contain dangerous loose ice. No anchorage was available, as deep water extended up to the beach.

It was reported that a spit, with a depth of less than 37m, projects from the S side of the harbor, about 2 miles E of Devils Punchbowl.

New Glacier lies S of Devils Thumb and is an extension of a level snow-covered plateau which forms the S side of Mackay Glacier. New Glacier is fed by the Minnehaha Ice Falls, which descend from a mottled cone standing W of Mount England.

Mount England (77˚02'S., 162˚27'E.), 1,205m high, is the most prominent massif rising on the S shore of Granite Harbor. Its slopes descend abruptly from the snow-covered summit to the New Glacier.

4.11 Cape Roberts (77˚02'S., 163˚12'E.), the S entrance point of Granite Harbor, is formed by a low, rocky, triangular-shaped spit which extends seaward for about 0.5 mile. Many grounded icebergs have been observed in the vicinity of this cape.

Discovery Bluff, 490m high, is located on the W side of Avalanche Bay, 7 miles WNW of Cape Roberts. This bluff consists of a conspicuous headland with steep slopes separated by gullies. Botany Bay lies between Discovery Bluff and Cape Geology, about 1 mile W. This latter cape is formed by a patch of gravel. A beach of granite boulders fronts the head of the bay.

From Cape Geology, the shore extends SW for about 1.5 miles to the face of New Glacier, at the foot of Mount England. It is formed by steep, rocky cliffs, up to 229m high.

From Cape Archer, the coast extends NE for 13 miles to Cape Ross. Gregory Island, dark and 0.3 mile in diameter, lies close to the coast, 2 miles NE of Cape Archer. This island, which is 100m high, may be mistaken from seaward at times for the cape.

From Cape Archer, a piedmont extends inland for about 6 miles and is bordered by the hills rising along the N shore of Granite Harbor. At a point about 5 miles S of Cape Ross, this piedmont recedes about 0.3 mile from the shore and rests on a red granite platform.

From Cape Ross, the coastal piedmont extends NW for about 7 miles to Tripp Bay. Depot Island, small and 60m high, lies 0.8 mile offshore, about 2 miles NW of Cape Ross. The W side of this island has accessible slopes, but its other sides consist of perpendicular, granite cliffs rising from the water's edge.

Tripp Island, 110m high, lies in the center of Tripp Bay, 7 miles NW of Cape Ross. It is conspicuous, dark, and marks the entrance to two deep valleys which lie behind it. The N of these valleys is filled by Fry Glacier which is about 2 miles wide and has vertical, smooth walls.

Cape Day is located 30 miles N of Cape Ross. Charcot Cove lies between this cape and Bruce Point, 7 miles NW. The Nordenskjold Ice Tongue occupies most of this cove, although inlets, which recede about 2 miles, lie between the tongue and each of the entrance points. This tongue is about 20 miles long, 5 miles wide, 30m high, and is believed to be afloat. Its surface is formed by hard, bare glacier ice, except on the N side and the

seaward end, where drifting snow piles up. The surface is generally flat with gentle undulations. The N edge of the tongue terminates in a vertical ice cliff, 15m high, with overhanging snow cornices. The S edge is not uniform as the S winds produce marked erosion. This edge consists of steep slopes formed of serrated and scalloped green-glacier ice. There is no evidence of this ice tongue being actively fed. It is now believed that the tongue was once a part of a large piedmont and is now inactive and disintegrating.

The Harbord Glacier Tongue lies 14 miles N of the Nordenskjold Ice Tongue and the Cheetham Ice Tongue, the seaward extension of Davis Glacier, is located 7 miles N of it. Davis Glacier, 6 miles wide, trends W for about 15 miles and then curves SW. This glacier is heavily crevassed and a branch, which forms Clarke Glacier, flows N behind Lamplugh Island from near its seaward termination. The Cheetham Ice Tongue is about 3 miles long, 2 miles wide, and 12m high. The structure of this tongue has not been fully determined, but it appears to be largely formed of snow. Its relationship with Davis Glacier is based principally upon conjecture.

4.12 Prior Island (75˚41'S., 162˚54'E.) lies 5 miles S of Cape Irizar and about 1 mile off the SE end of Lamplugh Island. The granite cliffs of this island are about 90m high and covered with an ice cap, about 23m thick. Lamplugh Island, 4 miles wide and about 10 miles long, is 244m high and capped by glacial ice. Cape Irizar, the N extremity of the island, is formed by a bold, rocky headland. It is 180m high, consists of red granite, and has a glacial cap.

Franklin Island (76˚05'S., 168˚19'E.) lies 100 miles SSE of Cape Washington and about 80 miles E of Cape Day. This island is 6 miles long, 3 miles wide, and 310m high. It is covered with a thin ice cap. The N side of this island consists of precipitous cliffs, 150 to 180m high. Norway Rocks extend up to about 4 miles seaward of Bernacchi Head, the S extremity of the island. A stony beach, on which a large penguin rookery is situated, fronts the SW side of the island and is backed by cliffs, 122m high. A depth of 37m was reported to lie about 0.2 mile off this beach. It was reported that good anchorage could probably be found off the N side of this island during S winds.

4.13 Geikie Inlet (75˚30'S., 163˚00'E.), about 5 miles wide, lies between the cliffs on the S side of the Drygalski Ice Tongue and Cape Irizar, the N extremity of Lamplugh Island. Cape Reynolds, rocky and 100m high, forms the W shore of this inlet. Clarke Glacier lies near Cape Reynolds. It is 1 mile wide, 8 miles long, and is bordered on the E side by Lamplugh Island.

The Drygalski Ice Tongue is fed by the Larsen Glacier and David Glacier. This ice formation extends about 38 miles to its seaward extremity and varies in width. It is reported to have a maximum width of about 25 miles, along the shore. David Glacier flows into the Drygalski Ice Tongue to the N of Geikie Inlet. This glacier is about 8 miles wide and is presumed to extend WNW as far as the interior plateau, about 25 miles inland.

Cape Philippi, a dark cliff with vertical sides, is the E extremity of the D'Urville Wall, a strongly glaciated cliff, about 1,000m high, which extends W and forms the N wall of David Glacier. Above the cape, the summits of an extensive massif rise and separate David Glacier from Larsen Glacier. Mount Neumayer is the S of these summits and Mount Bellingshausen, 1,390m high, is the N. This latter peak has a steep and conspicuous cone.

4.14 Terra Nova Bay (74˚50'S., 164˚30'E.) lies between Cape Washington, 274m high, and the Drygalski Ice Tongue, 55 miles SSW, and recedes about 25 miles. The shores of the bay to the W of Cape Washington are formed by the ice cliffs, 15 to 48m high. These cliffs rise to the slopes of Mount Melbourne, 2,733m high, which rises 15 miles N. Occasionally, dark rocks project through the slopes of this peak and heavy ice falls are visible on its SW side. Mount Dickason, 2,033m high, stands about 37 miles NW of Cape Washington. Markham Island, 60m high, lies 8 miles NNW of the cape.

Gerlache Inlet lies 20 miles WSW of the same cape. Gondwana, a German scientific station, and Baia Terra Nova, an Italian scientific station, are situated in the vicinity of this inlet and are manned during summer.

Near Markham Island, the coast extends SW for 17 miles, the low shore rising to the slopes of a peninsula. Mount Abbott, 1,020m high, forms the summit of this peninsula and stands 25 miles WSW of Cape Washington. The S extremity of the peninsula consists of many low foothills. Evans Cove, 2.5 miles wide and free of dangers, lies close W of these foothills. The N shore of the cove is formed by a glacier with several conspicuous moraines.

Inexpressible Island, about 7 miles long and 3 miles wide, is 390m high and forms the W shore of the cove. A penguin rookery has been reported to exist at the S end of this island. Vegetation Island, narrow and about 1 mile long, lies 3 miles N of Inexpressible Island. Hells Gate Moraine is located between these two islands and extends SE to the shore of Evans Cove.

Terra Nova Bay is often ice-free when dense drift ice is found up to 20 miles offshore. This is due to the deflection of the current by the Drygalski Ice Tongue. The best approach to the bay is from the NE, but this route may be closed if strong SE winds have prevailed. Open water may be found near the N edge of the Drygalski Ice Tongue due to the current deflected by submarine eskers under the ice tongue.

Mount Nansen, a tabular-shaped massif, rises in terraces and terminates at its N end in precipitous walls. This massif, fronted by low and bare foothills, extends for about 8 miles N and forms the W side of Gerlache Inlet.

Reeves Glacier fills a large indentation in the NW side of the bay, W of Gerlache Inlet. Hansen Nunatak, 965m high, stands near the center of this glacier, 18 miles W of Vegetation Island. Teall Nunatak stands about 5 miles seaward of Hansen Nunatak. Large moraines extend SE on the undulating and heavily crevassed surface of the glacier.

Mount Larsen, 1,562m high, forms the S wall of the Reeves Glacier and consists of sheer, faceted-granite cliffs on its N side. Larsen Glacier, 3 miles wide, lies on the S side of Mount Larson and extends 25 miles from its seaward end to the interior plateau.

4.15 Cape Washington (74˚39'S., 165˚25'E.), a bold and truncated headland, is 274m high and forms the extremity of a

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spur of Mount Melbourne. This spur, which projects 7 miles SE and then 5 miles SSE, separates Wood Bay from Terra Nova Bay. Vast quantities of drift ice, swept N by the tidal current or moved by the summer prevailing winds, are often trapped along the shores of the spur. A shoal, with a depth of 14.6m, was reported to lie within 0.5 mile of the cape.

Wood Bay lies between Cape Washington and Cape Johnson, 35 miles N. This bay provides shelter, but drift ice is often carried in by the tidal currents and SE winds. The ice within the bay may not break out until February. The S shore of the bay consists of ice cliffs.

Lady Newnes Bay (73˚40'S., 167˚30'E.) indents the coast between Coulman Island and Cape Johnson. This bay, about 80 miles wide, is completely filled by an extensive and undulating shelf ice. Most of the area lying seaward of this bay has not been surveyed.

Coulman Island (73˚28'S., 169˚45'E.), 18 miles long, lies 95 miles NE of Cape Washington. A peak, 1,998m high, stands at the S end of this island. Cape Anne, the S extremity of the island, consists of an abrupt cliff, 305m high, and is fringed along the shore by a thick ice foot. Cape Wadworth, the N extremity, consists of a vertical cliff, 793m high, with glacier cliffs on either side. Landings have been made on rocks lying under these cliffs.

Caution.—A local magnetic anomaly has been reported to exist in the vicinity of Coulman Island.

4.16 From Cape Phillips, located 17 miles N of the N end of Coulman Island, the coast extends N, with rocky cliffs and spurs, for 21 miles to Cape Daniell. Steep, high cliffs, which are broken occasionally by ice slopes, extend 14 miles SW from Cape Phillips to Cape Jones, a black bluff with vertical sides. Mount Brewster, 2,026m high, is dome-shaped and stands above Cape Jones. The ice slopes descend from the summit of this peak and completely cover this section of the coast.

Tucker Inlet lies between Cape Daniell and Cape Wheatstone, 8 miles NNE, and is usually blocked by drift ice. The head of this inlet consists of snow-covered hills which rise W to Mount Northampton. This latter peak is 2,467m high and stands 18 miles W of Cape Daniell.

The land extending between Cape Wheatstone and Cape Hallett, 17 miles N, is shaped into a peninsula by inlets receding at the N and S ends. Cape Wheatstone is a steep, rocky bluff which is capped by a dome of ice. Cape Hallett consists of steep cliffs which are backed by Quarterdeck Ridge, 1,660m high.

Edisto Inlet lies between Cape Hallett and the mainland. This inlet recedes S for about 8 miles and is 3 miles wide. There are depths of 293 to 558m within this inlet.

Moubray Bay lies between Cape Hallett and Cape Roget, 20 miles NNE. An isolated rock lies about 8.5 miles N of the latter cape.

4.17 The **Possession Islands** (71˚56'S., 171˚10'E.), a group of nine islands and islets, lie 5 miles offshore, 9 miles E of Cape Roget. These islands and islets vary in size from being 1.3 miles long to being mere pillars of rock. Possession Island, the N and largest island, is low and bare, except at its SW extremity. Archer Peak, 116m high and abrupt, forms the S extremity of this island. Foyn Island, the central island, is 247m high and has mostly vertical sides. Heftye Island, the southernmost island, is 64m high. Several of the islets in the group are formed by pillars which have vertical walls up to about 9m high. Landings have been made on these islands. The channel leading between the group and the mainland is 5 miles wide. This channel has been navigated by several vessels and is believed to be free of dangers, but it may be blocked by heavy drift ice at times. A tidal current has been experienced in the vicinity of this channel. The N current, with a rate of 3 knots, is reported to be considerably stronger than the S.

Cape McCormick, a conspicuous cliff, is located 11 miles NE of Cape Roget and is backed by steep glacial slopes which extend from the interior mountains. Mount Sabine, 3,719m high, and Mount Whewell rise close N of the cape. Mount Robinson stands behind Downshire Cliffs, 12 miles N of the cape, and has a conspicuous sharp peak.

From Downshire Cliffs, the coast extends 23 miles NNW to Cape Adare, the N extremity of Adare Peninsula. This peninsula is 2,050m high; its E side descends in sheer cliffs to the sea. Several pillars of rock fringe the shore in this vicinity.

Cape Adare to Porpoise Bay

4.18 Cape Adare (71˚17'S., 170˚14'E.) is the E entrance point of Robertson Bay and also the NE extremity of Victoria Land. This cape consists of a vertical cliff of black basalt, 305m high. It is reported that a hut is situated near the N end of the cape. Two pillar rocks, known as The Sisters, lie close to the N extremity of the cape.

Several shoals have been reported to lie within an area located about 2.5 miles NW of the cape. However, deep water, over an uneven bottom, has been reported to lie about 3.5 miles NW of the cape. Shoals have been reported extending 3 to 4 miles W from Cape Adare.

Robertson Bay lies between Cape Adare and Cape Barrow, 19 miles W, and recedes for about 25 miles. This bay is dominated by the Admiralty Mountains, the slopes of which are so steep that, except in the valleys, no snow or ice is able to lodge, and bare rock is shown everywhere. This bay probably remains free of ice from January to April. New freezing usually begins in April, but strong offshore winds frequently drive the ice out of the bay during the winter months. Drift ice moves in and out of the bay under the influence of the tidal currents.

A current sets round Cape Adare and into Robertson Bay, bringing in masses of ice. This current sometimes attains a rate of 5 knots, but is much affected by the tide. An eddy current has been reported to occur within the inner part of the bay and then set out along its E side. Anchorage can be obtained anywhere off the E side of this bay, but usually in a depth of 27m close off the S side of a beach which lies 1 mile S of Cape Adare. However, this side of the bay is especially subject to SE blizzards. Anchorage can also be taken, in a depth of 20m, close off the E side of Colbeck Bay, a small inlet, lying near the head of Robertson Bay.

Caution.—Robertson Bay should be navigated with great care and vessels should give Cape Adare a wide berth.

4.19 **Atkinson Cliffs** (71˚17'S., 168˚55'E.), 680m high, are located 7.5 miles SE of Nelson Cliff, 540m high, from which they are separated by the Simpson Glacier Tongue, projecting about 2.5 miles seaward. Mount Cherry-Garrard, a conspicuous peak, stands on the Atkinson Cliffs; the Anderson Ice Falls lie close SE of them. The E side of these ice falls are bordered by a steep, rocky ridge which descends from the slopes of Mount Wright. Turret Island and Flat Island lie close SE of this ridge. Cape Barrow forms the NE end of the latter island and the W entrance point of Robertson Bay. Shipley Glacier descends steeply and envelops the W sides of those two islands, ending at the water's edge in a vertical cliff, 27m high. Cape Wood forms the E extremity of Flat Island.

Cape Scott is located 22.5 miles NW of Nelson Cliff and 6 miles ESE of Cape Oakeley. Smith Inlet, 8 miles wide, appears to be a fjord and recedes for a considerable distance. Mount Dalmeny stands above the S shore of this inlet and Cape Oakeley, a dark and bold headland, forms its E entrance point. This section of the coast consists of dark, conspicuous cliffs fronting snow-covered hills. High mountains rise inland, the most prominent being Mount Pechell which stands 13 miles W of Cape Scott.

Yule Bay lies 20 miles NW of Smith Inlet and is entered between Cape Dayman and Cape Hooker, 9 miles NW. The latter cape forms the S end of a fork-shaped projection.

The Lyall Islands, a group of four, lie about 3 miles offshore, 6 miles SE of Cape Dayman. This portion of the coast is backed by high hills, the most prominent peak being Mount Elliot.

Cape North, located 27 miles WNW of Cape Hooker, consists of a vertical, snow-covered cliff, 61m high. The coast between this cape and Yule Bay consists of high ice cliffs.

4.20 The **Balleny Islands** (66˚55'S., 163˚20'E.), a group of five, lie with the SE island located about 190 miles NNW of Cape Hooker. The group forms a chain which extends in a NW/SE direction for about 100 miles. The islands are heavily glaciated and are volcanic in origin. Ice tongues project into the sea from their slopes.

The sea area lying between this group and the mainland is frequently impenetrable due to heavy drift ice. The current in the vicinity of the chain sets NW and field ice from the Ross Sea drifts toward the group and often becomes choked up between the islands and the mainland.

Young Island, the NW island, is long and narrow with a gentle, sloping plateau, 1,340m high. This island is 19 miles long, 4 miles wide, and is entirely covered with snow. Cape Ellsworth, the N extremity of this island, consists of a rocky bluff, 290m high, off which lie Seal Rocks, up to 15m high. Foul ground fronts these rocks and lies up to 2 miles seaward. A below-water rock lies about 3 miles NNW of this cape. Breakers, position approximate, were reported (1959) to exist in the vicinity of this rock.

The W side of the island is steep and crevassed, but the E side is low. The S extremity consists of a rocky wall, 186m high, capped by ice sheet. Cape Douglas, the E extremity, is located 4.5 miles NNE of the S extremity, and is fronted by two prominent and rocky bluffs, 162m high. A prominent cone is reported to stand 6.5 miles SSE of Cape Ellsworth.

Row Island lies 2.3 miles SSE of Cape Douglas. It is about 0.5 mile long and 183m high.

Borradaile Island, lying 3 miles SE of the S extremity of Young Island, is 2 miles long and 1 mile wide. This island is ice-capped, 381m high, and has sheer sides. Beale Pinnacle, 61m high, lies close to the E end of this island and is shaped like a boot. Rocks, which break, front the N and NW ends of this island and extend up to 2.5 miles seaward. The channel leading between Borradaile Island and Young Island has not been thoroughly surveyed.

Buckle Island lies 16 miles SE of Young Island. This island is 13 miles long, 4 miles wide, and extends in a NNW/SSE direction. It consists of a gentle sloping plateau, 1,238m high. In some places, rocky cliffs descend to the water's edge. In others, long ice cliffs forms the seaward edge of glacial slopes and descend between breaks in the rocky masses. Cape McNab, 354m high, forms the S extremity of this island. A glacier descends in the vicinity of the cape from the high interior and flows between rocky walls. Scott Cone, 31m high, rises 2 miles NNE of this cape. Eliza Cone, 67m high with an archway through it, rises 1 mile W of the cape.

Sabrina Island, about 0.7 mile long, lies 2 miles S of Cape McNab and is 90m high. A conspicuous pinnacle, known as The Monolith, stands at the S end of the island and is 79m high. A group of rocks, which breaks heavily, lies 2.5 miles SE of this pinnacle. Below-water rocks lie close N and NE of the island. A shoal is reported to lie in midchannel between Sabrina Island and Buckle Island.

Sturge Island, the SE of the group, lies 45 miles SE of Buckle Island. It is 18 miles long and 8 miles wide. Steep, rocky cliffs and a broad ice tongue descend from the interior to form the coast. This island is completely ice-capped and Brown Peak, 1,167m high and prominent, stands in its S part. Cape Freeman, 672m high with a vertical rock wall, forms the N extremity of this island and Cape Smyth, with a long ice slope, forms the S extremity. Rocks, awash, lie within about 0.5 mile SE and SW of this latter cape. A shingled spit extends about 0.3 mile ESE from Cape Smyth and rises to a hill, 100m high. Four detached stacks lie close ESE of the seaward extremity of this spit. A shelf, with depths of 11 to 15m, extends up to about 0.5 mile S of the shingled spit. Temporary anchorage may be taken on this shelf and about 0.2 mile from the spit.

4.21 **Scott Island** (67˚24'S., 179˚55'W.) lies 315 miles NE of Cape Adare. It is about 0.3 mile long, 1.5 miles wide, and extends in a N/S direction. When approaching the Ross Sea from New Zealand, many vessels prefer to proceed to Scott Island and then turn S. The N part of the island consists of precipitous cliffs, 41m high. The slopes above these cliffs rise to a rounded summit, 49m high, which stands in the center of the island. The slopes on the S side of this summit descend toward the S extremity of the island, where they end about 2m above the water. The island is completely ice-capped. Small coves lie at the NE and NW extremities of the island and are obstructed by many rocks over which the sea breaks.

Haggits Pillar, a column of rock, is 64m high and stands close off the W side of the island. A cavern, 15m high, passes through the N end of Scott Island. The S side of the island is

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fringed by foul ground. The remaining sides of the island have depths of at least 14m lying as close as 90m offshore.

Scott Island Bank extends up to 40 miles S of the island. An isolated depth of 60m is reported to lie about 28 miles SSW of the island.

4.22 **Archer Point** (69˚11'S., 157˚39'E.) is rocky and backed by the Wilson Hills, which extend WNW. A long and narrow glacier, with a forked end, lies close W of this point. It extends NNW from the Wilson Hills and projects about 15 miles seaward. Babushkin Island lies close E of this glacier and 5 miles NW of the point.The Terra Nova Islands lie 17 miles NNE of the point. They are small, low, and rocky.

Cape Kinsey is located 25 miles ESE of Archer Point and three small islands are reported to lie about 3.5 miles NW of it. The coast between is rugged and reaches the sea in steep, rocky points which are separated by glaciers and backed by the Wilson Hills. The most prominent headlands along this stretch are Williamson Head, located 4 miles E of Archer Point, and Drake Head, located 12 miles WNW of Cape Kinsey. Harald Bay indents the coast between Archer Point and Williamson Head. Davies Bay lies close W of Cape Kinsey and appears to recede for a considerable distance. A depth of 278m was reported to lie about 17 miles NE of Cape Kinsey. Many grounded icebergs have been observed along this stretch of coast and a strong NW tidal current sets in this vicinity.

Cape Cheetham (70˚18'S., 162˚42'E.) is located 82 miles SE of Cape Kinsey. The land between has not been fully surveyed. This cape appears to be an isolated pinnacle which forms the E extremity of Rennick Bay. The bay is about 18 miles wide; its W entrance point consists of high cliffs with outcroppings of rock. Rennick Glacier flows into this bay.

From Cape Cheetham, the coast extends ESE for 18 miles to Cape Williams and is backed by the Bowers Mountains, which are rugged, snow-covered, and of moderate height. An island, known as Sputnik Island, is reported to lie about 15 miles SE of Cape Williams and a rock is located close off its SW end. Cape Cheetham is separated by a valley of col from Mount Bruce. This latter peak is 1,639m high and forms the summit of the Bowers Mountains.

Leningradskaya, a Russian station, is situated 18 miles SE of Cape Kinsey. It was reported to be unoccupied (1995).

The Lillie Glacier Tongue, 38m high, extends about 12 miles N from snow-covered, rounded hills between Cape Cheetham and Cape Williams. An islet, 909m high, is reported to lie close off the NW end of this glacier tongue and about 3 miles E of Cape Cheetham. A depth of 245m was reported to lie about 8 miles N of the tongue of the glacier. Many grounded icebergs and unbroken fast ice have been observed to fringe the shore in this vicinity. A strong NW current sets along this part of the coast.

4.23 **Cape Freshfield** (68˚20'S., 151˚00'E.) is located 150 miles WNW of Archer Point. The coast between is quite jagged and consists of numerous indentations. Lauritzen Bay lies about 15 miles W of Archer Point and is obstructed by an ice shelf. Depths of 117 to 362m have been reported to lie within this bay. The head of the bay is backed by Magga Peak, 244m high, which consists of a mass of sheer rock in flat-iron shape with a strip of fast ice, 1 mile wide, extending along the coast from its base. A cairn was reported (1962) to stand on the summit of this peak. Drury Nunatak and Reynolds Peak both stand about 14 miles SW of Magga Peak.

Cape Buromskiy, located 35 miles WNW of Archer Point, forms the W extremity of a small projection which extends NW from the coast. An island lies close W of this cape. The Mawson Peninsula, about 35 miles wide, is centered with its N extremity located about 40 miles E of Cape Freshfield.

The George V Coast is considered to lie between 155˚E and 142˚E. It was discovered and explored by the Australasian Antarctic expedition, under Sir D. Mawson (1911-14).

Virik Bank lies about 160 miles N of Cape Freshfield and has a least reported depth of 95m. A dangerous shoal has been reported to lie about 33 miles SW of this bank, but its existence and position are doubtful.

Deakin Bay (68˚23'S., 150˚10'E.) lies 18 miles W of Cape Freshfield. A depth of 585m over a bottom of slate, mud, and stone was reported to lie within this bay.

Cape Wild (68˚23'S., 149˚07'E.), the W entrance point of Deakin Bay, is located 28 miles W of Cape Freshfield. Cape Blake is located 8 miles NW of Cape Wild.

Horn Bluff, located 8 miles SW of Cape Blake, is formed by a prominent rock bastion projecting from beneath the ice cap. This bastion is fronted by coastal cliffs, 325m high, and its upper part consists of several great conspicuous columns, resembling organ pipes. The cliffs are broken only by shallow, narrow coves where the ice descends to the sea.

4.24 Cape Spencer is located 25 miles W of Cape Blake and about 5 miles E of Buckley Bay, which is filled by the high ice cliffs of the Ninnis Glacier. This large glacier descends steeply from the high interior through a broad valley and is heavily hummocked and crevassed. Dixson Island, 335m high, lies 33 miles NW of Cape Spencer, near the W limit of the Ninnis Glacier. This ice-covered island is about 11 miles long and 6 miles wide.

Cape Hurley (67˚36'S., 145˚18'E.) is located about 45 miles NW of Dixson Island and marks the point where Mertz Glacier reaches the sea. This stretch of coast is unbroken by rock outcrops and, like the coast farther E, consists of an ice cliff behind which, 20 to 25 miles from the sea, rise ice-covered slopes, up to 920m high. Fisher Bay lies 4 miles W of Cape Hurley and is bounded on its W side by the E side of the Mertz Glacier Tongue.

The Mertz Glacier Tongue extends NE for about 30 miles from the coast and has a width throughout of about 20 miles. It terminates at the sea in ice cliffs, up to about 50m high. This tongue is believed to be afloat and a depth of 728m has been reported to lie close off its W edge. The surface of this tongue is heavily fissured.

4.25 Buchanan Bay, located 47 miles NW of Cape Spencer, lies on the W side of the Mertz Glacier Tongue. Mount Murchison, 567m high, stands 8 miles SW of this bay and is almost entirely covered in snow. Aurora Peak, 533m high, rises 4 miles SSW of Mount Murchison, from which it is separated by a gully. The W shore of the bay is formed by the continental ice slopes which rise to Mount Hunt. This latter peak is dome-shaped and 457m high. It forms the S end of a promontory which projects N and terminates in Cape de la

Motte, the W entrance point of the bay. The Hodgeman Islands and the Close Islands lie close off the W and E sides, respectively, of this cape. The islands are all small and ice-capped.

Watt Bay, 6 miles wide, indents the coast close W of Mount Hunt. The shore descends to almost sea level at the head of this bay. Madigan Nunatak, a conspicuous and jagged ridge of gray gneiss, rises 10 miles WSW of the head of the bay and is 731m high. The W part of the bay is obstructed by many rocks and small islands which lie up to 2 miles offshore.

4.26 **Cape Gray** (66˚51'S., 143˚22'E.), faced by ice cliffs, is located 12 miles NW of Watt Bay and is the N termination of an extensive ice plain which descends from the interior in a series of crevassed slopes.

The Way Archipelago consists of numerous small islands and rocks which front the coast and lie up to 2 miles offshore. Stillwell Island, the largest of this archipelago, lies close NE of the cape. This island is steep, rocky, about 0.3 mile in diameter. It is 37m high near the NW extremity.

Commonwealth Bay (67˚01'S., 142˚40'E.), 27 miles wide, lies W of Cape Gray and recedes for about 12 miles. The E side of this bay is obstructed by many islets which lie up to 2 miles offshore. The Hannam Islands lie about 2 miles offshore, 7 miles W Cape Gray. Whetter Nunatak, a conspicuous rocky outcrop, juts through the ice cliffs, 3.5 miles S of these islands. The Laseron Islands, a small group, lie on the SE side of the bay. The Mackellar Islands lie in the center of the bay and about 1.5 miles from the head. This group consists of about 30 rocks and small islands which extend over an area, about 2 miles long and 1 mile wide. The largest island in the group is about 0.5 mile long and is the site of a large penguin rookery. Several reefs and shoals lie in the vicinity of these islands and they should be approached with care.

4.27 **Cape Denison** (67˚00'S., 142˚40'E.), a rocky point, is located in the center of the S shore of Commonwealth Bay. This cape is formed by a glacial moraine of ice-polished gneiss. It is about 0.5 mile long, 1 mile wide, and has a mean elevation of 12m above sea level. Landing may be made within a cove lying close S of the cape. This cove is 0.2 mile wide, 0.5 mile long, and has an average depth of 4.6m.

About 0.5 mile inland, the morainic ice joins the inland ice sheet, which is 55m high. About 12 miles inland, the continental slopes rise to a height of 610m. Heavily crevassed ice slopes descend vertically to the sea in ice cliffs, 18 to 46m high, on each side of Cape Denison. A hut and a memorial cross are reported to stand near the cape.

Anchorage can be obtained about 1 mile W of Cape Denison, but the bottom is extremely uneven. This area appears to have depths of 37m or less over a bottom of mostly rock. The anchorage is protected from the strong prevailing winds, which blow offshore from between S and SE, and also from drifting icebergs and ice pressure.

At Cape Denison, the average wind speed is phenomenally high and it is probably the windiest region in the world. The annual average wind speed is reported to be 38 knots or gale force. Almost continuous blizzards blow for 9 months of the year in this vicinity and whirlwinds of snow occur during the rare periods of comparative calm.

It was reported (1985) that a sheltered haven for small boats lies close W of Cape Denison. A reef, which is partly above-water at LW, extends across the entrance. A rock, awash, was reported (1989) to lie about 1.6 miles W of the cape.

Point Alden (66˚48'S., 142˚02'E.) is the W entrance point of Commonwealth Bay. From this point, the coast extends W for 12 miles to Cape Decouverte. This latter cape is the NW extremity of the largest island in a group, known as the Cruzon Islands, which lie close off the coast and extend in a NW/SE direction for about 1.5 miles. The Sentinel Islands, another small group of rocky islands, lie about 3.5 miles E of Cape Decouverte and close off the ice cliffs.

From Cape Decouverte, the coast extends SW for 10 miles to Zelee Glacier. This stretch of coast is fronted by many islands, some of which lie up to about 2.5 miles offshore.

Port Martin, a peninsula, is located 8 miles SW of Cape Decouverte and was the site of a former base. This base was destroyed in 1952, as a result of a storm of great violence and a fire.

Petrel Island (66˚40'S., 140˚00'E.) lies 30 miles WNW of Port Martin and is the site of Dumont d'Urville Base, a French station. A radiobeacon is situated at the island and is activated on request.

4.28 Zelee Glacier extends for about 7 miles NW and then about 2.5 miles W, meeting the coast again about 2 miles SE of Cape Jules. A few islands and shoals are reported to lie within 1.5 miles NE of the E side of this glacier. Two islands, located about 1 mile apart and fronted by shoals on their E sides, lie 4 miles NE of the N extremity of the glacier. Lacroix Nunatak, which reaches the coast about 1.5 miles NW of the glacier, is 88m high at its W end.

Cape Jules, 0.7 mile wide, is located 15.5 miles W of Cape Decouverte and projects about 0.8 mile from the coast. A small cove indents the middle of the N side of this cape. Tristan Island and Yseult Island lie close off the NW and NE extremities, respectively, of the cape.

From Cape Jules, the Adelie Coast extends W for about 10 miles to Cape Bienvenue. This latter cape is small, rocky, partially ice-covered, and 44m high. From Cape Bienvenue, the coast continues W for 10 miles to the Astrolabe Glacier Tongue. This tongue extends 4 miles NE from the ice cliffs and is about 3.3 miles wide. Piner Bay, an open bay, is formed between the NE extremity of the glacier tongue and Cape Bienvenue. Cape Geodesie, low and ice-covered, is located 2.8 miles NW of the W side of the Astrolabe Glacier Tongue. It has several prominent and rocky outcrops at the NE end.

The Geologie Archipelago extends W and N of the glacier tongues. This archipelago is roughly divisible into three island groups. The N group consists of the Dumoulin Islands, which are numerous and cover an area about 2 miles in extent. Icebergs are reported to ground along a line, which extends SSE for about 4 miles, from close E of these islands.

Islands are reported to lie about 6 miles NW and 8 miles N of Cape Geodesie. Breakers were reported (1958) to exist about 16 miles N of the cape.

From Cape Geodesie, the coast extends 31 miles WNW to Cape Pepin. About 8 miles NW of Cape Geodesie, Liotard Glacier reaches the sea and forms a small tongue. Janet Rock, a small rock, lies 17.5 miles WNW of Cape Geodesie and close

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off the ice cliffs. The Francais Glacier lies about 7 miles W of Cape Pepin.

The Adelie Coast extends 20 miles WNW from Cape Pepin to Cape Robert and then 22 miles W to Cape Bickerton, the E entrance point of Victor Bay. Pourquoi Pas Point, an ice-covered cape, is located 20 miles NW of Cape Bickerton. This point forms the W entrance point of Victor Bay and also the W limit of the Adelie Coast.

Victor Bay extends about 7 miles to its head and is almost completely filled by the Commandant Charcot Glacier. Mathieu Rock lies close off the E side of the bay and X Rock lies 3 miles W of it. X Rock, 33m high, consists of a prominent, black mass which is streaked with quartz on its eroded flanks. Both of these rocks rise from islands that are embedded in the ice.

From Pourquoi Pas Point, the ice-covered cliffs of the Clarie Coast extend generally W for 140 miles to Cape Morse. The Pourquoi Pas Glacier Tongue lies near the E end of this coast.

Dibble Glacier is located 30 miles W of Pourquoi Pas Point and close E of Davis Bay. The Dibble Glacier Tongue, about 18 miles wide, is reported to extend up to about 40 miles N from the coast.

Davis Bay, about 15 miles wide at its entrance, lies between the Dibble Glacier Tongue and Cape Cesney, its ice-covered W entrance point. Lewis Island, the site of an automatic weather station, is small and rocky. It lies close inside the E side of the entrance to Davis Bay.

About 9 miles WNW of Cape Cesney, a stubby peninsula terminates at Cape Keltie and forms the northernmost point of land on the Claire Coast. Freeman Point is located 23 miles W of Cape Keltie and forms the W entrance point of Perry Bay. This latter bay is about 12 miles wide at its entrance and recedes for about 4 miles. Freeman Glacier fills the W side of this bay.

From Freeman Point, the coast extends 35 miles W to Cape Carr. This latter cape is prominent, ice-covered, and forms the seaward extremity of the W part of the Claire Coast. Harrison Glacier and May Glacier are located 13 miles ESE and 7 miles WSW, respectively, of Cape Carr.

The Banzare Coast extends between Cape Morse and Cape Southard. Porpoise Bay, Maury Bay, and Paulding Bay lie E to W, in that order, and completely indent this stretch of coast.

Porpoise Bay, 85 miles wide at its entrance, lies at the E end of the Banzare Coast. It recedes for about 46 miles and is entered between Cape Morse and Cape Goodenough. This latter cape, which forms the W entrance point, is ice-covered and the N extremity of the Norths Highland. The shores of the bay are interrupted by numerous glaciers. The W glacier terminates in Cape Spieden, a prominent tongue, which lies 16 miles SE of Cape Goodenough.

Porpoise Bay to Barrier Bay

4.29 Maury Bay (66˚33'S., 124˚42'E.) lies SW of Cape Goodenough and is entered between Stuart Point and Clark Point. This bay is believed to be generally filled by ice and is marked by prominent tongues which extend seaward from Blair Glacier and Hudson Glacier. The bay was reported (1963) to be fronted by the Voyeykov Ice Shelf, which extended up to about 30 miles offshore, as far E as Cape Goodenough.

Paulding Bay, centered 40 miles W of Maury Bay, is ice-filled. This bay indents the W end of the Banzare Coast between Clark Point and Cape Southard. It is about 50 miles wide at the entrance and recedes for 22 miles.

Henry Bay lies 35 miles SW of Cape Southard; the Henry Islands and Chick Island obstruct this cove. An automatic weather station is reported to be situated in the vicinity of this bay. The Dalton Iceberg Tongue extends up to about 60 miles N from the vicinity of Cape Southard.

Cape Mikhaylov is located 80 miles W of Cape Southard. Cape Waldron is located 85 miles WNW of Cape Mikhaylov; Totten Glacier discharges on its E side.

The Budd Coast extends between Cape Waldron and the Hatch Islands, 140 miles W. Cape Poinsett, located 55 miles NW of Cape Waldron, is the N point of land along this coast. The Balaena Islands lie about 50 miles WSW of Cape Poinsett and close off the coast. The largest island of this group is 1 mile long and 46m high. It is composed of granite and has cliff-like slopes.

4.30 Cape Folger (66˚08'S., 110˚44'E.), located 17 miles SW of the Balaena Islands, is the E entrance point of Vincennes Bay. Shoals front this cape and extend up to about 20 miles WNW of it. Shoal depths of 12.8 and 16.4m are reported to lie about 14 miles NW and 8 miles NW, respectively, of the cape. Petersen Bank lies with its S end located about 24 miles NW of the cape.

Vincennes Bay is entered between Cape Folger and Cape Nutt, 67 miles SW. It indents the Budd Coast and the adjoining Knox Coast and recedes S for about 22 miles. Adams Glacier and Bond Glacier descend into the head of this bay. The Windmill Islands, forming a chain, lie close off the NE side of the bay. This chain extends S for 15 miles and its N end lies 6 miles SSW of Cape Folger. The Frazier Islands and the Donovan Islands, two groups located about 5 miles apart, lie between 5 and 7 miles off the E side of the bay. Nelly Island, the SE of the Frazier Islands, is 90 high. Chapel Island, the NE of the Donovan Islands, is 43m high.

Stonehocker Point is located on the E side of the bay, 9 miles SW of Cape Folger. The Swain Islands, a large cluster, lie centered 2.8 miles NE of this point, but have not been fully surveyed.

Newcomb Bay is entered between Stonehocker Point and Kirby Island, 0.8 mile S. It lies between the SW side of the Clark Peninsula and the Bailey Peninsula, 1 mile SW. A fairway leads to this bay from the W but it is encumbered by Fitzpatrick Rock, 1.2m high and ice-capped, which lies about 0.5 mile SW of the W extremity of the Clark Peninsula. Gibney Reef, which dries 1.5m, lies about 0.5 mile NW of the W extremity of the Clark Peninsula. Larsen Bank, with a least depth of 15.8m, lies about 0.5 mile ENE of Fitzpatrick Rock. The N part of this bay has depths of 18 to 82m and provides safe anchorage for large vessels over good holding ground.

Kilby Island is 13m high; a beacon stands on its summit. Another island, 30m high, lies 0.3 mile SSE of Kilby Island and is surmounted by a beacon. Molholm Island lies 0.6 mile ENE of Kilby Island and is also surmounted by a beacon.

Wilkes Station (66˚15'S., 110˚31'E.), in a state of disrepair and decay, is situated in a valley on the Clark Peninsula, 0.3 mile NE of Stonehocker Point. It was established by the U.S. in 1957 and remained active until 1969. During the summer, the station remains uncovered to a limit dependent on the season melt. Numerous radio masts can be seen in the vicinity of the former station.

Casey Station (66˚17'S., 110˚32'E.) is situated on the highest point of the Bailey Peninsula. This facility consists of numerous large modern buildings, which are painted with bright colors and are visible for 6 miles. A reinforced earthen wharf is situated in the vicinity of this station and is used for re-supply operations. A radiobeacon is situated at the station and will be activated on request.

The former station, which is now known as Old Casey Station or the Tunnel because of its tunnel-shaped construction, was closed in 1988.

Anchorage.—The bottom off the station is reported to consist of rock with poor holding ground. Vessels may anchor, in a depth of 44m, about 0.2 mile E of Kilby Island, or in a depth of 29m about 0.2 mile NNW of Molholm Island, or close E of Larsen Bank.

Caution.—It is reported that explosives are scattered across an area of 500 square meters lying close E of Wilkes Station. This area is marked by warning signs.

4.31 The Knox Coast extends W from the Hatch Islands to Cape Hordern. From Cape Nutt, this coast extends 146 miles NW to Cape Elliott.

Underwood Glacier, located 2 miles W of Cape Nutt, projects about 8 miles seaward. Merritt Island lies close to the shore, about 22 miles NW of this glacier.

Bowman Island, 305m high, lies 29 miles NE of Cape Elliott. It is low, dumbbell-shaped, and ice-domed. The center section of this island is about 2 miles wide. Two rocky islands, positions approximate, were reported (1948) to lie about 50 miles ENE of the N extremity of this island.

Mill Island (65˚37'S., 101˚00'E.), crescent-shaped and ice-capped, is 18 miles long and 4 miles wide near its middle.

Bowman Island and Mill Island are usually surrounded by drift ice and grounded icebergs.

The Shackleton Ice Shelf, an extensive ice sheet, fronts the coast and extends about 200 miles W from a point located 45 miles WNW of Merritt Island. It is fed by the glacial flows from the continent and extends N for about 120 miles. The seaward edge of this shelf is 18 to 31m high and is estimated to be about 180m thick. The observance of numerous grounded icebergs off its NW face suggests that the shelf may be aground at some points. Heavy drift ice is usually found along the N face of the shelf, being carried there by the W setting current.

Tressler Bank, with depths of 85 to 177m, extends 25 miles W and then 20 miles N from the NW end of the Shackleton Ice Shelf. The Davis Sea lies on the W side of the Shackleton Ice Shelf. The Queen Mary Coast extends E from Cape Filchner to Cape Hordern.

4.32 Junction Corner (66˚28'S., 94˚35'E.) marks the point where the W edge of the Shackleton Ice Shelf meets the mainland. The surface here is undulating with extensive pressure ridges and crevasses. The ice-covered slopes of the continent, up to 914m high, stand S of Junction Corner. They extend for about 30 miles but are devoid of any conspicuous landmarks.

From Junction Corner, the coast extends ESE for 38 miles to Cape Moyes, an ice-covered point. Roscoe Glacier flows into the Shackleton Ice Shelf about midway between these two points. The Gillies Islands lie 5 miles N of Cape Moyes. They consist of two small, rocky outcroppings, 53m high.

Masson Island lies 23 miles N of Cape Moyes. This island is 19 miles long, 9 miles wide, and 465m high.

From Cape Moyes, the coast extends SE for 5 miles and then NE for 13 miles to **Cape Dovers** (66˚29'S., 97˚08'E.). Heavy ice falls descend from the interior slopes between these two capes. Henderson Island, ice-capped and 241m high, lies 5 miles N of Cape Dovers. Bay of Winds, lying E of Cape Dovers, is 8 miles wide and recedes for about 12 miles. Alligator Island, lying in the center of this bay, is 0.5 mile long, narrow, and 150m high on its W side. Avalanche Rocks, lying on the SE shore of the bay, are a distinctive outcrop of rocks, 180m high. Delay Point, the E entrance point of the bay, consists of a sheer, rocky bluff, 183m high, which is surmounted by an ice cap, at least 60m thick. ice falls descend on either side of this point.

Hippo Island lies 2 miles N of Delay Point. This island consists mostly of dark-colored gneiss, interspersed with bands of red granite.

Cape Charcot, a sheer and rocky cliff, is located 7 miles E of Delay Point and forms the NE extremity of Melba Peninsula. Cape Kennedy, located 4 miles S of Cape Charcot, forms the S extremity. Reid Glacier, 8 miles wide, descends from the interior close SE of Cape Kennedy.

4.33 Cape Gerlache (66˚30'S., 99˚02'E.) is located 12 miles E of Cape Kennedy and forms the N extremity of the Davis Peninsula. This peninsula is 180m high, 4 miles wide, and forms the E limit of Reid Glacier.

David Island lies at the entrance to Reid Glacier. A channel, 3 miles wide, separates this island from Cape Charcot; another channel, 4 miles wide, leads between the island and the Davis Peninsula. David Island is 87m high and has several bare peaks and dark knolls. Watson Bluff, the NE extremity of the island, is formed by a projecting bluff of ice-worn gneiss, 274m high. The island is 12 miles long, 10 miles wide, and its summit consists of a bare ridge with steep, coarsely-weathered faces.

Northcliffe Glacier, lying S of the Davis Peninsula, flows NNE and joins Denman Glacier. This latter glacier projects 45 miles N from the general line of the coast.

Mount Barr Smith, 1,107m high, stands 40 miles S of David Island. Mount Strathcona, 976m high, stands 13 miles SSE of Mount Barr Smith. The coast to the W of David Island is fronted by the W part of the Shackleton Ice Shelf. Bigelow Rock lies off the W edge of the ice shelf, 23 miles NNE of Junction Corner. This small rock is reported to show about 3m of exposed rock above sea level.

4.34 Farr Bay (66˚35'S., 94˚23'E.) lies close W of Junction Corner. It is about 10 miles wide and recedes for about 5 miles into the ice-clad coast. From the W side of this bay, the land trends NW for 10 miles in a series of heavy, broken, and crevassed ice falls. Helen Glacier lies 5 miles W of

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the bay and is fronted by the Helen Glacier Tongue, which projects 10 miles seaward.

The **Haswell Islands** (66˚31'S., 93˚00'E.), a group of 12 small and rocky islands, lie off Mabus Point, the W entrance point of Wright Bay. The largest island is 0.7 mile long and 100m high.

Mirny Station (66˚33'S., 93˚01'E.), a Russian scientific station, is situated on the coast, close S of the Haswell Islands, and is permanently manned.

From Mabus Point, the coast extends SW for 8 miles and then NW for 15 miles to Cape Filchner. McDonald Bay lies on the E side of this latter cape. Adams Island lies 8 miles W of the Haswell Islands and 3 miles off the SW shore of the bay.

Drygalski Island (65˚45'S., 92˚30'E.) lies 45 miles NNW of the Haswell Islands. This island is 9 miles wide, 286m high, and has no rock visible. It is surmounted by a domed ice cap. A current setting NW has been observed in the vicinity of this island.

The Wilhelm II Coast extends from Cape Filchner to Cape Penck.

4.35 **Cape Filchner** (66˚30'S., 92˚12'E.), a sharp point on the ice-capped coast, is located 9 miles W of Adams Island. The mainland, 20 miles behind this cape, rises in a series of broken, crevassed ridges, up to 914m high.

From Cape Filchner, the very irregular coast extends W for 28 miles to Krause Point and then SW for 46 miles to Posadowsky Glacier.

Gaussberg (66˚48'S., 89˚15'E.), an extinct volcano, is 350m high; its pyramidal summit descends sharply on the N side to the sea. Its N side consists of rocky terraces and bare slopes covered with loose rubble. On the S side of this volcano, the ice rises to a height of 122m. The slopes on the W and E sides are covered with vast ice falls. Posadowsky Glacier, on the E side, descends about 450m in height over a distance of 6 miles.

Cape Penck is located 40 miles W of Gaussberg. A large bay, which recedes for 10 miles, lies between these two features; Philippi Glacier is located at its head.

From Gaussberg, a large ice barrier, known as the West Ice Shelf, extends NW as far as 66˚S. The E edge of this shelf lies along 89˚E. This shelf fronts the coast up to about 81˚E and is reported to extend up to 100 miles seaward in places.

Barrier Bay (67˚47'S., 81˚15'E.) is formed between the SW edge of this shelf and the coast to the W.

Four Ladies Bank (67˚35'S., 77˚30'E.) has a least known depth of 124m and was discovered by Thorshavn (1937). Another bank, with a least depth of 97m, is reported to lie about 25 miles NNE of the shallowest part of Four Ladies Bank.

Princess Elizabeth Land

4.36 Princess Elizabeth Land was first sighted from the air by Sir Douglas Mawson in 1931 and later partially charted by Lars Christensen in 1934 and Klaus Mikkelsen in 1935. The E part of this land has not yet been fully explored, but recent reconnaissance by Russian and Australian expeditions has greatly improved knowledge of this area.

Princess Elizabeth Land extends from 73˚E to 87˚43'E, where it joins Wilhelm II Land. The part of the coast lying between 76˚E and 81˚E is named the Ingrid Christensen Coast; that part lying between 81˚E and 87˚43'E is named the King Leopold and Queen Astrid Coast.

Gillock Island (70˚14'S., 71˚32'E.), the extent of which is not known, lies within the Amery Ice Shelf some distance off Princess Elizabeth Land.

The King Leopold and Queen Astrid Coast was discovered from the air in January 1934 by Lieutenant Gunnestad during a flight from Thorshavn. No ice-free land was seen. The ice shelf changes imperceptibly into continental ice and the ice edge is liable to vary in position from year to year.

Banzare Bank (59˚20'S., 76˚50'E.) was reported to have a least known depth of 184m and appeared to lie near the W end of a large bank the E limit of which is yet to be determined. Depths of less than 550m were reported to lie about 160, 250, and 285 miles E of the Banzare Bank.

4.37 **Prydz Bay** (69˚00'S., 76˚00'E.) is contained between the Amery Ice Shelf, on the W side, and the Ingrid Christensen Coast, on the E.

The **Larsemann Hills** (69˚25'S., 76˚05'E.), consisting of 11 rocky peninsulas, occupy about 11 miles of ice-free coast extending between Polar Record Glacier and the **Svenner Islands** (69˚02'S., 76˚45'E.), which lie 70 miles NE of Mount Caroline Mikkelsen.

Mount Caroline Mikkelsen (69˚45'S., 74˚07'E.) is 235m high. The Larsemann Hills rise to their tallest summit, 160m high, on the second peninsula from the E end.

A number of bases are situated in this area. Zhongshan, a Chinese station, stands in the this vicinity and Druzhnaya-4, a Russian station, is situated on the promontory between Rogers Glacier and Polar Record Glacier. Law Base, an Australian satellite station, is situated in this area. It is maintained from Davis Base and often activated during the summer months.

Ranvik Bay (69˚00'S., 77˚40'E.) is entered 15 miles NE of the Svenner Islands and is bounded on its N side by the **Rauer Islands** (68˚51'S., 77˚50'E.). These are a group of numerous and small rocky islands which lie SW of **Sorsdal Glacier** (68˚42'S., 78˚10'E.). The glacier is about 10 miles wide and is broken with ice falls and crevasses. Calving of the glacier front occurs in the summer months. The glacier tongue extends up to about 8 miles seaward, N of the Rauer Islands.

4.38 The **Vestfold Hills** (68˚33'S., 78˚15'E.), a stretch of ice-free coast about 40 miles long, lies NE of Sorsdal Glacier and stands 200 to 300m high. The ice cap, in which there are many ice-free saline lakes, can be seen rising behind this stretch of coast.

Davis Station (68˚35'S., 77˚58'E.), an Australian base, is permanently manned and includes a radio station which operates daily between 2330 and 1400 UT (GMT) and for longer periods on request. Numerous radio masts are situated in an area close N of the base buildings. A non-directional radiobeacon is situated at the base and will be activated on request.

A large number of islands lie up to 3 miles offshore, 25 miles NE of Davis Station. **Davis Anchorage** (68˚4'S., 77˚55'E.) lies in the S part of these islands and has been reported to be one of the best in the Antarctic. It is used by research vessels and others engaged in re-supply operations. Vessels have remained

at anchor here with winds of up to 50 knots. The bottom consists of patches of boulder-strewn medium sand lying between areas of rocky outcrops. The center of the anchorage, which has a depth of 22m, lies 0.4 mile S of Anchorage Island. Anchorage Patch, with a depth of only 12.1m, lies near the center. A wreck, with a depth of 19.8m, lies about 200m NE of this patch. The inshore limits of the anchorage are formed by O'Gorman Rocks, a rocky shoal area, which has a depth of only 1.3m. The W limits of the anchorage are formed by Newman Shoal, which dries 0.3m, lying 0.6 mile W of Torckler Rocks. A shoal, with a depth of 0.4m, lies about 200m S of Anchorage Island.

Thala Rock (68˚33'S., 77˚53'E.) is reported to lie, position approximate, about 0.3 mile W of the S extremity of Turner Island. This rock presents a danger to vessels approaching from the N.

Beacons, constructed of drums welded together, stand at the N end of Gardner Island, on the summit of Turner Island, and on the N end Torckler Rock. These drums are rusted and are hard to distinguish against the surrounding hillsides. Another beacon, cross-shaped, stands on the S summit of Anchorage Island. A small wharf, situated close S of the station buildings, can be used by small craft. It is constructed from boulders and earth fill. Amphibious vehicles can land over the beach lying adjacent to this wharf.

Caution.—Care should be taken when approaching Davis Station as many large icebergs may be encountered to the W of a line extending between Keuken Island and Barratt Island. The area lying to the E of this line may contain numerous small icebergs, bergy bits, and large quantities of brash ice. Local knowledge is required when approaching this base.

A local magnetic anomaly has been reported to exist in the vicinity of Davis Anchorage.

4.39 The **Svenner Islands** (69˚02'S., 76˚50'E.), a group of ten, lie 11 miles from the continental ice. An area of foul ground lies about 10 miles N of this group of small islands. The Sostrene Islands, consisting of two rounded islands, lie about 25 miles SW of the Svenner Islands and about 3 miles from the coast.

The main coast located opposite the Sostrene Islands trends SW for 45 miles to Mount Caroline Mikkelsen. From this peak, the coast extends N and forms Sandefjord Ice Bay, at the head of MacKenzie Bay. An island, known as Kista Rock, is the S in a chain of small islands which extends in a N/S direction within Sandefjord Bay. This island is reported to lie about 1 mile N of Mount Caroline Mikkelsen.

The Lars Christensen Coast is considered to be that part of the continent lying between the Murray Monolith and the head of the Amery Ice Shelf.

MacKenzie Bay, which indents the Lars Christensen Coast, is entered between the Amery Ice Shelf and Cape Darnley. On the W side of this bay, the ice slopes upward to a height of 274m high and is very crevassed. It then rises more sharply to the Prince Charles Mountains.

From its W edge located in MacKenzie Bay, the Amery Ice Shelf extends S for over 190 miles. Seylla Glacier, Charybdis Glacier, and Nemesis Glacier, descending from Prince Charles Mountains, join together and discharge on to this ice shelf, about 150 miles S of Cape Darnley.

4.40 Gillock Island (70˚26'S., 71˚52'E.), the extent of which is not fully known, lies within the ice shelf and some distance off Princess Elizabeth Land.

MacRobertson Land lies near 68˚S and extends from William Scoresby Bay to Cape Darnley. It consists of high, ice-covered land through which bare peaks rise at various intervals along or near the coast. The E part of this land is ice-covered and featureless, the shore presenting ice cliffs, 18 to 43m high. The W part is bordered by coastal cliffs and rocky headlands, and fronted by numerous islands and rocks. In the S part, many high peaks project above the ice slopes of the interior.

Cape Darnley (67˚43'S., 69˚30'E.), the extremity of the Bjerko Peninsula, consists of an ice cliff, 90m high, behind which slopes rise upward to a height of about 610m. Numerous icebergs have been observed stranded up to 50 miles NE of this cape. These grounded bergs often cause congestion of the drift ice in this vicinity. A depth of 141m over a rocky bottom was reported to lie close off the seaward extremity of the cape.

From Cape Darnley, the coast extends W for about 40 miles to Point Williams. This latter point consists of a bluff which forms the E entrance point of Shallow Bay.

Shallow Bay, a small recession in the ice cliffs, is about 10 miles wide. Dingsor Dome, a snow-covered mountain, stands 10 miles SSE of Cape Williams and is 792m high.

Murray Monolith, 244m high, stands 8 miles W of Cape Rouse and two rocks, awash, lie between them. Landing may be made at the foot of the W side of the monolith where the slope is not so steep. A dangerous rock is reported (1983) to lie about 5 miles NE of Cape Rouse.

4.41 Scullin Monolith (67˚47'S., 66˚42'E.) is crescent-shaped and 433m high. A reef extends N from the W extremity of the monolith, but vessels can approach it safely from the NNE.

Gustav Bull Mountains stand 15 miles W of Scullin Monolith and several conspicuous peaks in this range rise about 5 to 7 miles S of the coast.

From Scullin Monolith, the coast extending W as far as Cape Daly is reported to be fronted by many uncharted rocks and below-water pinnacles. Shoals, with depths of less than 15m, have been reported to exist in this area. The depths vary rapidly in this vicinity and vessels are advised to exercise great care when approaching the coast.

From the Scullin Monolith, the coast extends gradually WNW for 49 miles to Strahan Glacier. Cape Fletcher is located about midway along this stretch with Martin Reef, awash, lying within 10 miles of it. Many rocks and grounded icebergs have been observed in the vicinity of this cape. Foul ground has been reported to lie between 25 and 35 miles NNE of the cape.

Strahan Glacier descends to the sea and calves numerous icebergs which, together with drifting bergs, usually congest Nilsen Bay, which lies close W. Many bergs ground within the bay. Stevens Rock, small and bare, lies 2 miles E of Strahan Glacier and is 7m high. Storegg Bank lies about 30 miles N of Strahan Glacier.

From Strahan Glacier, the coast extends W, in a gradual convex arc, for 42 miles to Horseshoe Harbor. Cape Daly, an ice-covered promontory, is located about midway along this

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stretch. It is inconspicuous except when viewed from W and NW.

Several groups of snow-free islands lie within 15 miles NW of Cape Daly. These include the Thorgaut Islands, the Robinson Islands, and the Douglas Islands. The latter group, which rises to a height of 18m, is the outermost.

Holme Bay is entered between Gibbney Island and an unnamed point, 19 miles E. This bay is obstructed by a large number of scattered islands and rocks. A group of islands, known as the Rookery Islands, lies 2 miles offshore on the W side of the bay.

4.42 **Mawson Station** (67˚36'S., 62˚52'E.), an Australian scientific base, is situated at the head of Horseshoe Harbor and is permanently manned. This base consists of about 48 buildings and includes a power station, an aircraft hangar, a radio station, several garages for transport, a clinic, several laboratories, and living quarters.

Horseshoe Harbor may be approached through Holme Bay and Kista Strait, on the W side of which lie the Flat Islands and Moller Bank. Welch Rocks, Welch Island, and a group known as the Jocelyn Islands lie on the E side. The latter group consists of Verner Island, Petersen Island, Teyssier Island, and Lee Island. Anchorage may be obtained by small vessels, in a depth of 73m, within the harbor, which is about 0.2 mile wide. Entrance Island, 0.2 mile long, lies across the N side of the harbor and Entrance Shoal, with a depth of 7.9m, lies about 200m W of it. Local knowledge is essential for entering the harbor and approaching the station. Vessels are advised to contact the base by radio before attempting to enter.

Falla Bluff, a prominent headland, is located at the head of Utstikkar Bay. It is rocky, steep, and 366m high. Cape Simpson, a conspicuous and rocky bluff, is located at the N extremity of Ufs Island, 10 miles NW of this headland.

Byrd Head, a rocky and conspicuous outcrop, is located 2.5 miles WNW of Cape Simpson and is 366m high. Howard Bay lies between Byrd Head and Cape Simpson.

Cape Bruce, a bold and conspicuous bluff, is located 6 miles NW of Byrd Head. It is 184m high and forms the E entrance point of Oom Bay.

Oom Bay, about 2 miles wide, affords good shelter. However, several islands lie off the entrance and stranded icebergs have been observed in their vicinity. Landing may be made on shelving beaches fringing the lee sides of some of the islands.

Campbell Head, 182m high, is located 3 miles WNW of Cape Bruce. It consists of a bold, conspicuous promontory and forms the W entrance point of Oom Bay. Two small islands lie close off this promontory and a bay, which is filled by a glacier, lies on its W side.

The Kemp Coast extends between the head of Edward VII Bay and William Scoresby Bay. This coast consists of ice cliffs that are occasionally indented by bays. Except to the E of Cape Wilkins, mostly no bare rock is visible. Until recent years, heavy drift ice has rendered this coast inaccessible to vessels.

From Campbell Head, the ice-covered coast extends W for 20 miles to Trethewry Point, a rocky promontory projecting about 1 mile N from the coast. Rocky islands lie 0.5 mile E and close W of the seaward extremity of this point.

Numerous islands front the coast to the E of William Scoresby Bay. Dales Island, 50m high, lies 13 miles N of **Trethewry Point** (67˚24'S., 59˚47'E.). The Warnock Islands and Farrington Island lie 1 mile S and 4.5 miles SSW, respectively, of Dales Island. The Twins, two islands, lie 1.5 miles E of Farrington Island.

The William Scoresby Archipelago, which consists of numerous small and ice-free islands, extends for about 10 miles in a NE/SW direction between Farrington Island and the mainland coast to the S.

4.43 The **Sheehan Islands** (67˚22'S., 59˚46'E.), two in number, lie 1 mile N of Trethewry Point and at the E end of another group. These islands, which are separated by a narrow strait, are 0.5 mile long and have steep, rocky slopes with a rugged outline. Islay Island, 3 miles long and 1 mile wide, lies close W of the Sheehan Islands. Hum Island lies 0.8 mile SW of McDonald Point, the E extremity of Islay Island. Couling Island, 114m high, lies 0.5 mile N of Islay Island.

Macfie Sound separates the SW portion of William Scoresby Archipelago from Bertha Island. This sound extends in an E/W direction and is about 1 mile wide. A sounding of 183m, with no bottom, was observed in the E part of the entrance to this sound, midway between Sheehan Island and Trethewry Point.

William Scoresby Bay is entered between Green Point and Hope Point. Bertha Island, which is low at its E end and 122m high at its W end, is formed of fine-grained gneiss-like rock of a lightish-brown hue. The island also has many intrusions of a darker, igneous rock and a remarkable quantity of garnets. These rocks show the effects of severe wind erosion, being weathered into fantastic shapes.

The head of William Scoresby Bay is reported to consist of two coves, separated by a tongue of ice. No suitable anchorage has been found within this bay, but it affords excellent shelter in any weather and a landing may be made in several places. The shores of the bay are backed by hills, up to 213m high.

4.44 **Cape Wilkins** (67˚15'S., 59˚18'E.) is located 6 miles NW of Green Point and forms the NW extremity of Fold Island. The Tillett Islands lie 6 miles N of this cape.

Stefansson Bay lies close W of Cape Wilkins. This bay is about three times the size of William Scoresby Bay and is open to the N.

The Kemp Coast extends to the W of Stefansson Bay and consists of a series of dark, bold headlands, up to about 180m high. The continental ice flows to the sea between these headlands. The inland ice rises gently to an even skyline, which is broken only by Kemp Peak, 340m high, standing 16 miles SW of Cape Wilkins.

The Law Islands lie on the W side of the entrance to Stefansson Bay, 5 miles W of Cape Wilkins. Blackrock Head, a conspicuous and rocky outcrop, is located on the mainland behind these islands, 7 miles W of Cape Wilkins.

From Blackrock Head, the coast trends NW for 3 miles to a bold headland, 180m high.

4.45 **West Stack** (67˚03'S., 58˚03'E.), a rocky outcrop, is located 3 miles NW of East Stack. From this outcrop, the coast projects SSW in the form of a rocky bluff. Edward VIII Bay, about 12 miles wide, is entered about 20 miles NW of West Stack. This bay lies between the Oygarden Group, on the S side, and Austnes Peninsula, on the N. The Oygarden Group, a

chain of rocky and irregular islands, extends for 17 miles in a E/W direction close off the mainland. Kvarsnes Foreland, a prominent and rocky headland, is located on the S shore of the bay and is 107m high.

Cape Boothby, rounded and prominent, is located 8 miles N of the entrance to Edward VII Bay. This cape is fronted by below-water rocks which extend up to 2 miles seaward.

Kloa Point, a prominent promontory, projects about 1 mile E from the coast. It was reported (1961) that a dangerous rock lies about 1.3 miles NNW of this point.

Rayner Peak stands 60 miles WSW of West Stack; low, ice-covered land extends N for some distance from it. Several peaks, up to 457m high, stand to the W of Cape Boothby.

From Cape Boothby, the coast extends NW for 13 miles to Cape Davis and consists of an unbroken ice cliff, 18 to 36m high.

Magnet Bay (66˚22'S., 56˚20'E.), about 8 miles wide, lies 9 miles WNW of Cape Davis. The Galten Islands lie close off the E entrance point of this bay. The shore of the bay does not recede deeply into the land. Several prominent and rocky outcrops project from the head of this bay. The peaks of the Nicholas Range rise 10 miles S of the bay. Cape Borley is located 48 miles NW of Cape Davis.

4.46 Enderby Land (67˚30'S., 53˚00'E.), extending between 45˚E and Edward VII Bay, was discovered by Biscoe in 1831. It is covered by an ice sheet, above which stand several conspicuous mountain ranges.

The continental shelf is clearly defined in this vicinity. It extends 15 to 25 miles seaward of Enderby Land and has depths of 149 to 200m. Lines of grounded icebergs have been observed at intervals in this vicinity and these greatly influence the movements of the coastal drift ice. Prevailing winds and swells often drive the ice near to the land.

In summer, gales from between NE and E are not uncommon in this area, but, at other times, they blow with great violence from between S and SE. In summer, a persistent swell is reported to set toward the land from between N and NW. During the summer, the current in this area is reported to set W at a rate of about 7 miles per day.

From Cape Borley, the ice cliffs extend W for 14 miles to Doyle Point. Conradi Peak, 1,040m high, stands 15 miles SW of Doyle Point. From this point, the coast extends WSW for 5 miles and then WNW for 14 miles to Cape Batterbee, a rocky outcrop fronting the face of the ice cap. Vicars Island lies 5 miles offshore, about 10 miles E of Cape Batterbee. Several small islands and one large island lie close N of this cape.

Proclamation Island (65˚51'S., 53˚41'E.) is very prominent and consists of darkish-colored rock. It has steep, rocky slopes and a rounded summit, 244m high.

The Aagaard Islands, a group of small islands, lie close W of Proclamation Island. These islands often serve to anchor the drift ice which is carried by the currents along the coast and held against the shore by the N swell.

The coast located behind the Aagaard Islands extends W for 30 miles to Cape Close. Simmers Peaks, four sharp and black peaks, stand about 7 miles S of this part of the coast and are 840m high.

From Cape Close, the coast extends SW for 35 miles to Cape Ann.

4.47 Cape Ann (66˚10'S., 51˚22'E.) is formed by a small projection in the ice cliff. Mount Biscoe, a prominent and black-colored peak, stands above this cape. This peak is 700m high, sharp, and has steep slopes.

From Cape Ann, the coast extends in a general SSW direction for 40 miles to near 50˚S where it trends S. This part of the coast is usually fringed by dense drift ice.

White Island, the limits of which have not been fully defined, lies N of Sakellari Peninsula, from which it is separated by Styles Strait.

Casey Bay, about 25 miles wide, indents the coast SW of Sakellari Peninsula. Pinn Island and a number of smaller islands lie at the head of this bay. Alasheyev Bight lies W of Casey Bay and is separated from it by a promontory, 25 miles wide.

Molodezhnaya Station (67˚40'S., 45˚51'E.) is the main Russian research base. It is permanently manned and includes a meteorological station and an airfield.

Spooner Bay, which lies in the SE corner of Alasheyev Bight, was entered by a vessel for the first time in 1961. It is reported that this bay is backed by a number of reddish-tinged, rocky hills. The E side of the bay consists of a vertical face of black rock with an organ-pipe formation, 100m high.

Queen Maud Land extends between Coats Land and Enderby Land. Very little exposed rock lies near the coast of this land and the shore is mostly formed by high cliffs of continental ice or shelf ice. Depths of 1,646m were reported to lie at the edge of the ice and indicated that the shelf was floating and that the edge of the land mass was located still some distance to the S.

The E coast of Lutzow-Holm Bay is formed by a vast ice sheet which slopes gently W to the sea and terminates in an ice cliff, 20m high. Numerous bare, rocky areas, some of which are quite extensive, protrude through this ice sheet. Many islands fringe this part of the coast, which extends S to 70˚S.

4.48 The **Flatvaer Islands** (69˚01'S., 39˚33'E.), a group which includes Ongul Island, lie 3 miles offshore, near the E entrance point of Lutzow-Holm Bay. The islands are hilly, 30 to 49m high, and are filled by small ponds, which are ice-free during the summer.

Syowa Station (69˚00'S., 39˚35'E.), a main Japanese base, is situated within a bay on the NE side of Ongul Island and is permanently manned.

From the head of Lutzow-Holm Bay, the W shore of the bay extends N for 30 miles to an unnamed point. Padda Island, 255m high, lies 5 miles N of this point.

The coast then extends in a general NW direction for about 110 miles to the N extremity of the Riiser-Larsen Peninsula.

The Prince Harald Coast was discovered by air in 1937 and is considered to extend between the N extremity of the Riiser-Larsen Peninsula, in 34˚E, and the mainland in the vicinity of the Flatvaer Islands, in 40˚E. A chain of reddish-colored, ice-free mountains is reported to stand along this coast.

Riiser-Larsen Peninsula to Cape Norvegia

4.49 The Princess Ragnhild Coast, discovered by air in 1931, is considered to extend between 20˚30'E and 34˚00'E. This coast consists of a continuous ice cliff with high mountain

ranges rising in the interior. The Riiser-Larsen Peninsula separates the Princess Ragnhild Coast from the Prince Harald Coast.

Gunnerus Bank lies off the Riiser-Larsen Peninsula. It extends about 120 miles seaward and has a least known depth of 421m. This bank drops abruptly off to depths of over 1,800m at its W side, but slopes gradually on its E side.

From the NE end of the Riiser-Larsen Peninsula, the coast extends W for 20 miles and forms the N shore of a broad peninsula. The ice-covered land in this vicinity is devoid of nunataks or bare outcrops. From this latter peninsula, the coast extends SW for about 250 miles in the form of high ice cliffs to 23˚'E. It then extends W to 20˚E.

Breid Bay (70˚15'S., 24˚15'E.), about 20 miles wide, indents the ice cliffs and recedes S for about 15 miles. This bay is reported to have a least depth of 187m. The former Roi Boudouin Station, which was closed in 1967, was situated on the S side of this bay.

The Sor Rondane Mountains, up to 3,460m high, stand about 75 miles S of Breid Bay. From the coast in the vicinity of the bay, the ice-covered land rises gradually to a height of about 700m high at the base of these mountains. The ice in this vicinity, including Godel Ice Port, was reported (1960) to extend to about 70˚05'S.

The Princess Astrid Coast, discovered by sea in 1931, is considered to extend between 5˚E and 20˚E.

4.50 Novolazerevskaya Station (70˚46'S., 11˚50'E.), a permanently-manned Russian scientific base, and **Georg Forster Station** (70˚46'S., 11˚50'E.), a permanently-manned German scientific base, are situated along this coast. A coastal radio station is situated at the former base.

From the latter station, the land mass extends 180 miles SW and rises fairly evenly to the Wohlthat Mountains, which are 4,300m high.

The Princess Martha Coast is considered to extend between 5˚E and 20˚W. It is fronted by a cliffed ice face, 21 to 36m high. The W part of this coast consists of low continental ice without any nunataks. The E part consists of slopes rising to the Maudheimvidda Mountains, which are over 3,000m high.

At position 70˚00'S, 00˚30'W, a tongue of ice projects N for about 65 miles and varies in width from about 55 miles at its base to about 25 miles at its seaward end. This tongue has been determined to be afloat with depths of over 2,000m lying near its edge. Many icebergs have been observed packed up against this ice tongue in a chaotic mass. These bergs are apparently carried by the coastal current.

4.51 Byrd Ice Port (69˚34'S., 00˚41'W.), an indentation, lies on the W side of a tongue of ice which projects N from the Fimbul Ice Shelf. This ice port was reported (1964) to be about 5 miles wide and to be fringed by ice cliffs, 6 to 18m high. Several islands were reported to lie within this tongue of ice.

From Byrd Ice Port, the ice tongue continues SW for about 20 miles to the mouth of an unnamed ice port. This latter ice port is about 13 miles wide and depths of 263 to 2,295m have been reported to lie within its entrance. The shelf then extends SSW for about 18 miles where it is interrupted by a stretch of the Princess Martha Coast, 17 miles long, which is not fronted by a shelf.

Sanae Station (70˚18'S., 02˚22'W.), a South African base, is situated near the NE extremity of a peninsula which separates the Jelburt Ice Shelf from the Fimbul Ice Shelf.

From the E entrance point of **Norsel Ice Port** (71˚01'S., 11˚00'W.), the shelf was reported (1964) to extend 140 miles ENE to the W end of a peninsula which forms the E side of the Jelbart Ice Shelf. An island lies close off the W side of the Jelbert Ice Shelf.

Atka Ice Port (70˚35'S., 07˚51'W.) is 15 miles wide at its entrance and was reported (1982) to extend for about 14 miles S into the shelf. It was reported (1955) that wave action had undercut the shelf in numerous places and several underwater ice rams projected up to 30m seaward. The shelf within the ice port is 4 to 12m high. A depth of 50m was reported to lie close to the ice front in the SW part of this ice port.

4.52 Georg Von Neumayer Station (70˚39'S., 08˚15'W.), a permanently-manned German scientific base, is situated close W of Atka Ice Port. Anchorage may be obtained, in a depth of 147m, off the W side of Atka Ice Port and also in a depth of 73m within its SW corner. Vessels, with icebreaker assistance, can usually reach Atka Ice Port by approaching it between 15˚W and 5˚W and then proceeding along the ice front.

Norsel Ice Port, an inlet on the shelf, lies 32 miles NE of Cape Norvegia and was reported (1961) to be 5 miles wide. It was the unloading point for Maudheim Bay during the Norwegian-Swedish-British Expedition of 1950, when the depth alongside was reported to be 393m.

Druzhnaya-3 (71˚06'S., 10˚49'W.), a Russian base, is manned during the summer.

Svea Station (74˚35'S., 11˚13'W.), a Swedish base, is situated about 200 miles S of Cape Norvegia and is manned during the summer.

Between the W limit of the Princess Martha Coast and Cape Norvegia, 215 miles NE, the coast is fronted by an ice shelf about 50 miles wide.

Cape Norvegia (71˚20'S., 12˚18'W.) forms an angle in the coast; on its W side lies a bight known as Seal Bay. Two small islands lie on the SW side of this bay. The cape is fronted by an ice shelf, about 50 miles wide.

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